

Notice of Allowability

Application No.

10/788,946

Examiner

Ling-Siu Choi

Applicant(s)

TAO ET AL.

Art Unit

1713

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 04/07/2006.
2. ☒ The allowed claim(s) is/are 1 and 3-8.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S-AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☒ Other See Continuation Sheet.

Supplemental
Office Action Summary

Application No.

10/788,946

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Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _____ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on _____.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) _____ is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This Office Action is in response to the Amendment filed April 7, 2006. Claims 2 and 9-11 were canceled and claims 1 and 3-8 are now pending.

Allowable Subject Matter

2. Claims 1 and 3-8 are allowed.

3. The following is an examiner's statement of reasons for allowance:

The present claims are allowable over the closest references: Golino et al. (US 4,532,228), Blum et al. (US 2002/0011439 A1), and Krug (US 5,460,854).

A method to provide a barrier coating on a porous ceramic article:	
A	applying a polymer solution or dispersion:
	A. a liquid vehicle B. a cross-link promoter C. a water-soluble, thermally cross-linkable, pyrolyzable hydrocarbon polymer selected from the group consisting of amine-functional ionene polymers, polyvinyl alcohol, polyacrylic acid, and polyacrylic amine
	to the porous ceramic article
B	heating the ceramic article to a temperature sufficient to substantially remove the vehicle from the applied solution or dispersion and to effect cross-linking of the hydrocarbon polymer

(summary of claim 1)

A method to apply a catalyst or catalyst washcoat to a ceramic catalyst support:		
A	applying a polymer solution or dispersion	a liquid vehicle
		a cross-link promoter
		a thermally cross-linkable and pyrolyzable hydrocarbon polymer
	to the catalyst support	
B	heating the ceramic article to a temperature sufficient to substantially remove the vehicle from the applied solution or dispersion and to effect cross-linking of the hydrocarbon polymer to thereby provide a polymer-coated support	
C	applying to the polymer-coated support an aqueous washcoating or catalyst coating and drying the coating or washcoating to provide a catalyst-coated or washcoated support	
D	heating the catalyst-coated or washcoated support to a temperature at least sufficient to remove the cross-linked polymer coating	

(summary of claim 6)

Golino et al. disclose a method to produce a catalyst-coated ceramic honeycomb structure, comprising (a) infiltrating a honeycomb structure with a fugitive material comprising a liquid organic compound which can be irreversibly hardened through a chemical or thermal reaction to inhibit the entry of a subsequently-applied washcoat into the microcracks of the honeycomb structure, wherein the liquid organic compound is selected from the group of furfuryl alcohol, polyfurfuryl alcohol, a thermosetting phenol/formaldehyde resin system, and acrylonitrile; (b) solidifying a liquid organic compound which can be irreversibly hardened through a chemical or thermal reaction in

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the microcracks; (c) applying a washcoat in the form of an aqueous slurry to the honeycomb structure; (d) heating the coated honeycomb structure in an oxidizing atmosphere to a temperature to bind the particles of the washcoat together and to burn out the fugitive material from the microcracks (col. 3, lines 26-68; col. 4, lines 1-33; claims 1 and 6). However, Golino et al. do not teach or fairly suggest a method to provide a barrier coating on a porous ceramic article or a method to apply a catalyst or catalyst washcoat to a ceramic catalyst support, comprising both cross-link promoter and a water-soluble, thermally cross-linkable, thermally pyrolyzable hydrocarbon polymer selected from the group consisting of amine-functional ionene polymers, polyvinyl alcohol, polyacrylic acid, and polyacrylic amine.

Blum et al. disclose a method to form a ceramic filter, comprising (a) forming a slurry containing a zirconia-based ceramic precursor and preceramic polymer capable of being cured and a solvent; (b) **depositing** the slurry on a porous substrate to form a layer; (c) **curing** the zirconia-based ceramic precursor and preceramic polymer to form a nonfusible binder; and (d) **heating** the deposited slurry to form a porous layer on the substrate resulting in a ceramic filter (claim 1). However, Blum et al. do not teach or fairly suggest a method to provide a barrier coating on a porous ceramic article or a method to apply a catalyst or catalyst washcoat to a ceramic catalyst support, comprising both cross-link promoter and a water-soluble, thermally cross-linkable, thermally pyrolyzable hydrocarbon polymer selected from the group consisting of amine-functional ionene polymers, polyvinyl alcohol, polyacrylic acid, and polyacrylic amine.

Krug discloses a method to strengthen a fired porous ceramic core by impregnating the core with an aqueous solution of a water-soluble resin and drying the impregnated core to remove water, wherein the water -soluble resin is poly(acrylic acid), poly(acrylamide), or poly(vinyl alcohol) (col. 2, lines 44-53; claim 1). However, Krug does not teach or fairly suggest a method to provide a barrier coating on a porous ceramic article or a method to apply a catalyst or catalyst washcoat to a ceramic catalyst support, comprising both cross-link promoter and a water-soluble, thermally cross-linkable, thermally pyrolyzable hydrocarbon polymer selected from the group consisting of amine-functional ionene polymers, polyvinyl alcohol, polyacrylic acid, and polyacrylic amine.

In light of the above discussion, it is evident as to why the present claims are patentable over the prior art.

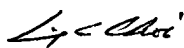
Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ling-Siu Choi whose telephone number is 571-272-1098.

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If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reach on 571-272-1114.



LING-SUI CHOI
PRIMARY EXAMINER

June 15, 2006